

Memorandum

To: Ross Johnson, Staff Chief
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Norm Cook, Deputy Chief

Date: March 7, 1997

Tel: (707) 576-2275
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From: Department of Forestry and Fire Protection

Subject: Guidance on Recognition of
Nonfish Aquatic Habitat

The attached document is being sent to you in order that it can be circulated to all CDF Forest Practice Offices within your area of responsibility. This document is that which we approved at the FMC Meeting in February 1997. It provides guidance to our Forester's on recognizing "Aquatic Habitat for Nonfish Species" under the Forest Practice Rules. This document is not intended to replace current policy, only to assist in applying it. Please make sure all Forest Practice Inspectors and Foresters receive a copy.

For a copy of reports referenced in the attached document, contact CDF's biologists at Sacramento Headquarters, Region Headquarters, Area Offices, or the Humboldt-Del Norte Ranger Unit.

Craig E. Anthony
Deputy Director
for Resource Management


By: Dean R. Lucke
Assistant Deputy Director
for Forest Practice

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Attachments

Guidance on Identifying Aquatic Habitat for Nonfish Species

The intent of issuing this guidance is to clarify existing policy and to improve the quality and validity of watercourse classification. The goal is to improve compliance with the Forest Practice Rules and their intent.

Title 14, 916.5(936.5, 956.5), Table I, identifies two characteristics of Class II waters:

1. Fish always or seasonally present off-site within 1000 feet downstream and/or
2. Aquatic habitat for nonfish species.

If fish are present or known to be present seasonally within 1000 feet of a location, the determination of Class II waters is simply a distance measurement. If the location is greater than 1000 feet upstream from fish habitat, the determination of stream class is based on the presence of aquatic habitat for nonfish aquatic species.

The Board of Forestry has not defined "**nonfish aquatic species**" and this has been a source of confusion. A biological definition includes any species that **requires** free water other than simply for consumption for any portion of its life cycle. For example, species or life stages of species that respire with gills require aquatic habitat. Thus, a mayfly larvae (that may require over a year to metamorphose into a "non-aquatic" life stage) and a plant species that is always found in free water are unambiguous "non-fish aquatic species."

The *Guidebook to Board of Forestry Watercourse and Lake Protection Rules* published by CDF in 1983 continued some of the confusion by using imprecise terminology. It states:

- "...if there are insects and/or larger forms of life **requiring** aquatic habitat..." This is an explicit statement that insects and other forms of life are "aquatic."
- "...**larger** forms of aquatic life, such as frogs, **crayfish**, salamanders, turtles, **etc...**". The term "larger" is meaningless as used. "Crayfish" are an invertebrate life form that dictates a Class II. Taxonomically, a crayfish is no "larger" than a mayfly, nor is it a "higher form" of life. The term "etc" in the list which includes other invertebrates (crayfish) leaves a broad range of taxa to cover.
- "...beyond 1000 feet the presence alone of aquatic insects does not merit classification of Class II." This statement diminished the weight given to aquatic insects in determining if a watercourse is "aquatic habitat."

In a November 3, 1987 letter to CDF Regional Chiefs, CDF Director Jerry Partain attempted to clarify some of the issues around stream course classification. He stated:

"... aquatic insects and other physical indicators such as riparian and aquatic vegetation, watercourse debris, and potential for small pool formation may be indicative of Class II waters."

Unfortunately, the letter still retained the statement

"... insects alone may not be sufficient to justify classifying a watercourse as having Class II water."

Thus, in some locations, field practices continued to disregard the presence of aquatic insects or other aquatic attributes as indicators of "aquatic habitat for nonfish species." In some cases, the observable, physical presence of larger forms of nonfish aquatic animals was the only determinant used to conclude that a water was "aquatic habitat for nonfish species". Because the aquatic stages of salamanders and frogs are absent or difficult to detect during much of the year, reliance on presence can lead to misidentification of aquatic habitat.

In order to reduce the ambiguity about the rule's intent, CDF will consider "non-fish species" to be only vertebrates, not plants or invertebrates. Thus, "aquatic habitat for nonfish species" is habitat for aquatic vertebrates.

Certain features of the environment are highly associated with aquatic vertebrates and thus are reliable indicators. Therefore, CDF forest practice inspectors are directed to consider that a water which exhibits indicators, as listed below, to be "aquatic habitat for nonfish species." If aquatic vertebrates cannot be physically found, that does not indicate that a watercourse is not aquatic habitat. To resolve disputes which arise during PHIs, CDF may design seasonally and spatially appropriate surveys from which negative results would support the RPF's statement that the stream is not habit for non-fish aquatic vertebrates. Watercourses sometimes have localized areas of aquatic habitat separated by non-habitat. In this case, stream classification along the watercourse may alternate if consistent with correctly identifying aquatic habitat, expressing the conditions in the THP, translating the information to the operator, and enabling enforcement.

Indicators of Aquatic Habitat

Aquatic habitat may be ephemeral and vertically mobile as animals follow free water into the substrate during periods when flow goes subsurface. Finding aquatic animals is often difficult even during appropriate seasons, especially when the animals are present at low density. Therefore, determination that a water provides "aquatic habitat for nonfish species" can and should be based upon indicators of the habitat, not simply the presence or absence of the species. Indicators need not all be present to warrant "aquatic habitat for nonfish species". Neither will the presence of isolated indicators always signify that the waters are "aquatic habitat for nonfish species". Indicators include the presence of:

- **Free water.** Free water is that which is not adhered to solid particles such as soil. If water is present for periods equal to or longer than that required by the water-dependent stages of animals in the vicinity, the water body is likely aquatic habitat. Free water may be both surface or subsurface. Tadpoles require free surface water, while some salamanders can follow free water by maneuvering through substrate cracks and crevices as streamflow goes subsurface. Using the duration of free water as a criteria requires RPFs to be knowledgeable of the natural history and ecology of non-fish aquatic vertebrate species in their project's area. With this knowledge, the fact that a stream might be inhabited by aquatic

vertebrates may have little impact on on-the-ground operations. The RPF can propose to deviate from the standard protection measures and still accurately identify aquatic habitat through the use of in-lieu practices that protects the nonfish aquatic species. CDF can approve a reasoned in lieu practice. For example, the Pacific chorus [tree] frog (*Pseudacris [=Hyla] regilla*) is a common, wide ranging species with a short water-dependent stage. It requires continuous surface water for a minimum of two months.

- **Aquatic plants.** The presence of hydrophilic plants is related to the availability of water. In some areas of the state, such as the north coast, hydrophilic plants are widespread and not restricted to water course or lake. Simply because hydrophilic plants are broadly distributed does not lead to a conclusion that watercourses with which they are associated are not aquatic habitat. To the contrary, where there is abundant water, there will likely be abundant forms of aquatic life including vertebrates. The portion of a landscape that provides "aquatic habitat for nonfish species" will differ geographically; i.e., two watercourses with similar structural and topographical characteristics under different hydrological and climatic regimes may have very different habitat values.

Reed [1988. *National List of Plant Species that Occur in Wetlands: California (Region 0)*. USDI, Fish & Wildlife Service Biological Report 88(26.10)] ranks most plant species along a water-dry continuum from "Obligate Wetland Plants" through "Obligate Upland Plants." The presence of obligate wetland plants is an excellent indicator of habitat for aquatic vertebrates. A few of the many examples of widespread obligate wetland plants are the giant horsetail (*Equisetum telmateia*); Pacific foxtail (*Alopecurus saccatus*); water hemlock (*Cicuta douglassii*); California pitcher plant or cobra lily (*Darlingtonia californica*); arrow-leaved groundsel (*Senecio triangularis*); hedge-nettle (*Stachys ajugoides*); cattail (*Typha* sp.); skunk cabbage (*Lysichiton americanum*); most monkeyflowers (*Mimulus* sp.); many, but not all species of bullrush, flatsedge, rush, sedge, and spikerush (*Scirpus* sp., *Cyperus* sp., *Juncus* sp., *Carex* sp., *Eleocharis* sp., respectively); most willows (*Salix* sp.); buttonbush (*Cephalanthus occidentalis*); and mountain alder (*Alnus incana* ssp. *tenuifolia*).

Occasional presence of plants in the next, most water-dependent group (Facultative Wetland) may not be cause to signify aquatic habitat; however, frequent or dense groupings might be. A few of the many examples of widespread facultative wetland plants are marsh and rough horsetail (*Equisetum palustre* and *E. hyemale*); chain fern (*Woodwardia fimbriata*); most other species of bullrush, flatsedge, rush, sedge, and spikerush not listed above (*Scirpus* sp., *Cyperus* sp., *Juncus* sp., *Carex* sp., *Eleocharis* sp., respectively); western coltsfoot (*Petasites frigidus* var. *palmatum*); stream or smooth violet (*Viola glabella*); milk maids (*Cardamine californica*); enchanter's nightshade (*Circaea alpina*); red-osier and brown dogwood (*Cornus*

stolonifera and *S. glabrata*, respectively); California Spikenard or Elk Clover (*Aralia californica*); blueberry (*Vaccinium* sp.); blackberry, except Himalaya Blackberry (*Rubus* sp., except *R. procerus*); water birch (*Betula occidentalis*) and red, Sitka or thinleaf, and white alder (*Alnus rubra*, *A. viridis* ssp. *sinuata*, and *A. rhombifolia*).

Reed (1988) provides a more exhaustive list of the obligate and facultative wetland plants. Individuals are encouraged to refer to this document, other botanical references, and local expertise.

- **Water-dependent stages of aquatic insects.** Because most of the macroscopic, free-water dependent stages of benthic (living on, in, or near the substrate) aquatic insects require a year or more to complete their life cycle, their presence is an excellent indicator of aquatic habitat for vertebrates. In addition, they are more numerous, more active, easier to find, and present for longer periods than the vertebrates for which they act as surrogate. Some examples of the more common benthic aquatic insect taxa with extended periods of water-dependent stages include 8 of 9 families of Mayflies (Ephemeroptera, the exception is Baetidae); all families of Stoneflies (Plecoptera); 15 of 16 families of caddisflies (Trichoptera, the exception is Hydroptilidae); all 14 families of true flies (Diptera); both families of hellgramites (Megaloptera); all 6 families of water beetles (Coleoptera); and all 8 families of dragonflies and damselflies (Odonata).
- **Physical condition of the channel and its position in the landscape.** A channel's structure, local geology, topography, soils, and hydrology are useful evidence of its possible aquatic habitat function. Channels characterized by pool formation, low gradient, large drainage area upslope, and/or nearby springs and seeps will likely provide aquatic habitat because they hold water for extended periods. Channels on steep slopes with shallow soils over bedrock with small drainage areas less likely to provide aquatic habitat. Some soil types are also associated with wetland conditions and can be an excellent indicator of the presence of aquatic habitat. For example, the presence of gleyed soils indicates prolonged soil saturation and soils that are reduced. A list of hydric soils can be obtained from the Corps of Engineers Wetlands Delineation Manual (US Army Corps of Engineers 1987). Hydrological conditions such as the presence of water near the surface during the dry season (≤ 16 inches) can also be an excellent indication of "aquatic habitat for nonfish species" waters.

Memorandum

Regional Chiefs
Department of Forestry and
Fire Protection

Date : November 3, 1987

R 14

Attn: Resource Management

Telephone: ATSS (8) 493-5158
(916) 323-5158

From : Department of Forestry AND FIRE PROTECTION

Subject : 5100 FOREST REGULATION
5110 Forest Practice Act
Class II Waters - Watercourses

Recently there has been some uncertainty about what constitutes Class II waters, specifically in watercourses. The Department recognized the importance of aquatic insects for the first 1000 feet above a Class I watercourse. In the training conducted statewide in 1982 it was stressed that insects contained within 1000 feet of a Class I watercourse were sufficient evidence to indicate aquatic habitat which was beneficial to downstream fish populations. Some foresters have indicated that beyond the first 1000 feet above a Class I watercourse the presence of aquatic insects does not constitute a Class II water and that only larger animals, such as amphibians, are indicators of a Class II.

The following is offered as clarification. Title 14, CAC 916.5, 936.5, 956.5, Table I, identifies two characteristics of Class II waters:

- 1) Fish always or seasonally present off-site within 1000 feet downstream and/or
- 2) Aquatic habitat for nonfish aquatic species.

The classification system was developed to separate the state's waters into categories which are based on the most evident beneficial use being made of the water.

The most restrictive beneficial uses were judged to be water for domestic use and water containing fish life or spawning areas for fish. These uses represent Class I waters. Watercourses containing these uses generally flow water all year with the exception that some watercourses containing Class I water provide seasonal spawning and may be completely dry during a good portion of the year.

Man-made watercourses are defined as Class IV waters. The water they transport may be used for many uses. This classification is nearly self-explanatory.

Class III waters typically flow during a limited period of the year in response to precipitation and snow melt. The watercourses themselves serve primarily as conduits for the transportation of water downstream. Aquatic vegetation and aquatic habitat for nonfish species are absent. Water contained in these watercourses does not have a specific beneficial use until reaching that portion of the watercourse which shows evidence of aquatic habitat.

Class II waters are the waters which are between the domestic supply and fish supporting waters, and those waters which flow during a limited time of the year. Class II waterways flow year around or at least a substantial portion of the year.

The key factor in the determination of a Class II water is aquatic habitat for nonfish species. This habitat may be indicated by vegetation, or by nonfish aquatic species such as aquatic frogs, aquatic snails, aquatic insects, crayfish, salamanders, turtles, beavers, etc.

The presence of aquatic insects is an excellent indicator of aquatic nonfish habitat, however, insects alone may not be sufficient to justify classifying a watercourse as having Class II water. In some watercourses aquatic insects may be the only visible animal life indicators present at the time of inspection. In these cases, the aquatic insects and other physical indicators such as riparian and aquatic vegetation, watercourse debris, and potential for small pool formation may be indicative of Class II waters.


The intent is not to protect aquatic insects but to identify the habitat that nonfish aquatic species are dependent upon and to provide protection to this habitat and to other specific beneficial uses made of the waters contained in the watercourses.

All waters providing habitat for larger nonfish aquatic animals are to be included in Class II waters. Table I of 14 CAC 916.5 states "...2) Aquatic habitat for nonfish aquatic species..." for Class II waters. The intent is to focus on larger animals and not insects alone. This intent can be traced back to the rule development hearings where frogs, crayfish, salamanders, turtles and otters, were given as examples of the kind of animals in habitat that should be protected.

There is judgment required in the identification of the classes of waters. Because of the biological diversity of nonfish aquatic

habitat, the rules were designed to allow the RPF to demonstrate his or her professional ability and judgment to identify, classify, and protect the beneficial uses of water.

We suggest that CDF Forest Practice Inspectors review the *Guidebook to Board of Forestry Watercourse and Lake Protection Rules*. This reference gives good pictorial examples of the four classes of waters. We caution you, however, that Table 1 a., of the handbook is incorrect. For the protection measures for Class I waters in the two slope classes of 30 to 50 percent and 50 to 70 percent, the protection measures should be BDG and ADG, respectfully, not BFG and BDG as indicated. Compare this table with Table I of 14 CAC 916.5.



JERRY PARTAIN
Director

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NO COVER LETTER/MEMO
AVAILABLE TO SIGNIFY
CDF POLICY.

From: Department of Forestry and Fire Protection

Subject: Clarification of watercourse classification.

Recently, issues have been raised pertaining to rule interpretation and appropriate method(s) in determining watercourse classification. In particular, questions have been raised as to those particular stream segments which lead directly into a Class I watercourse. A guidance document was circulated to all CDF Forest Practice Offices on March 7, 1997 entitled: *Guidance on Identifying Aquatic Habitat for Non-fish Species*. This document was circulated to assist field staff in correct identification of non-fish aquatic species and their associated habitat. The document begins with a brief summary of the existing forest practice rule language pertaining to watercourse classification. Unfortunately, the summary provided was incomplete and this has led to some confusion. In the March, 1997 mass mailing, subsection (3) was left out of the rule description.

The forest practice rules [Table 1, 14 CCR 916.5 (936.5, 956.5)] describe a Class II watercourse as one in which:

- (1) *Fish always or seasonally present offsite within 1,000 feet downstream and/or*
- (2) *Aquatic habitat for non-fish aquatic species.*
- (3) *Excludes Class III waters that are tributary to Class I waters.*

Subsections (1) and (2) are connected by "and/or", making the presence of either, alone or together, part of the determination. Subsection (3) is independent of (1) and (2). It may appear that subsections (1) and (3) are mutually exclusive, but they are not. Subsection (3) describes those watercourses that generally flow water only for brief periods, after significant rainfall events; water is generally absent for most of the year, and non-fish aquatic species do not have the opportunity to become well established or complete a major portion of their life cycle.

The forest practice rules define a Class III watercourse as:

No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high water flow conditions after completion of timber operations.

The Board has provided CDF with the ability to protect Class I waters by requiring protection on Class III tributaries where needed. For example, CDF recognizes that most of the time, especially in those areas of the State receiving abundant seasonal rainfall, stream reaches within 1,000 feet will contain aquatic insects which provide an important food source for fish in Class I watercourses. As such, Class III reaches within 1,000 feet of a Class I watercourse may warrant additional protection whether non-fish aquatic vertebrates are present or not.

Stream reaches on steep slopes within 1,000 feet of Class I watercourses are capable of rapid delivery of sediment generated from timber operations. As such, CDF recognizes that it may be appropriate to enhance Class III mitigation measures to protect the beneficial uses associated with the Class I stream. The Board's intent is clearly stated in 916.2 (936.2, 956.2). This is not to say that Class III streams, as accounted for in subsection (3), should be classified as Class II watercourses. Rather, the appropriate action is to ensure adequate protection for the Class III streams, and provide enhanced mitigation, if necessary, to provide for the beneficial uses associated with downstream Class I waters.